

TABLE 1
FISH SAMPLING PLAN SUMMARY
Leviathan Mine Site
Alpine County, California

Stream Reach	Sampling Locations ¹	Location Description	Sampling Method	Sample Testing ²	Rationale
On-Property Area			Individual samples will be collected using a three pass electrofishing method as described in SOP 29.0 (Fish Survey and Sampling). Samples will be subdivided as fillet and offal by the laboratory according to U.S. EPA guidance (U.S. EPA, 2000).	Metals ³ Arsenic speciation ⁴ Lipids Moisture content	These data will be used to support a human health and ecological risk assessment and evaluation of the need for remedial actions.
Aspen Creek	AC-19	1 location within the reach of Aspen Creek immediately above the confluence with Leviathan Creek where target fish species are located in sufficient size and quantity.			
Leviathan Creek	LC-18 LC-19	2 locations within the reach of Leviathan Creek between 4L Creek and Aspen Creek where target fish species are located in sufficient size and quantity.			
Downstream Study Area					
Leviathan Creek	LL-1 LL-2 LL-3	3 locations within Reach 1 of the DSA between the On-Property Area and Mountaineer Creek where target fish species are located in sufficient size and quantity.			
Bryant Creek	BR-1 BR-2 BR-3	3 locations within Reach 2 of the DSA between Mountaineer Creek and Barney Riley Creek where target fish species are located in sufficient size and quantity.			
Bryant Creek	BR-4 BR-6 BR-6	3 locations within the upper portion of Reach 3 in the DSA where target fish species are located in sufficient size and quantity.			
Bryant Creek	BR-7 BR-8 BR-9	3 locations within the lower portion of Reach 3 between Doud Creek and the EFCR where target fish species are located in sufficient size and quantity.			
Reference Area					
Upper Mountaineer Creek	UM-1 UM-2 UM-3	3 locations within the reach of Mountaineer Creek above between Posion Creek where target fish species are located in sufficient size and quantity.			
Lower Mountaineer Creek	LM-1 LM-2 LM-3	3 locations within the reach of Mountaineer Creek between Leviathan Creek and Poison Creek where target fish species are located in sufficient size and quantity.			
Cottonwood Creek	CC-1 CC-2 CC-3	3 locations within Cottonwood Creek between the springs and the EFCR where target fish species are located in sufficient size and quantity.			

Notes:

1. Approximate sample locations shown on Figure 6.
2. Analytical methods, sample volumes, and preservation requirements are summarized on Table 2.
3. Metals: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, mercury, iron, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc.
4. Arsenic III, arsenic V and inorganic arsenic.

Abbreviation(s)

EFCR = East Fork Carson River
RIFS = remedial investigation/feasibility study
SOP = standard operating procedure
U.S. EPA = United States Environmental Protection Agency

TABLE 2
FISH TISSUE SAMPLING MATRIX
Leviathan Mine Site
Alpine County, California

Parameter			Metals ¹	Mercury	Arsenic Speciation	Lipids	Moisture Content	QC Samples
								MS/MSD ³
Method			EPA SW6020C mod.	EPA SW7471Bmod.	EPA 1632A	Laboratory SOP	Laboratory SOP	Same as Primary Sample
Containers ⁴			zip-top bags					
Minimum Volume			170 g of whole body fish					
Preservation ⁵			Place on ice immediately; Ship with blue ice or dry ice					
Maximum Holding Time			Processing: 24 hr (unfrozen)/48 hr (frozen) Analysis: 6 months					
Laboratory			ALS					
Study Area	Stream Reach	Sampling Location ⁶						
ACSA	Aspen Creek	AC-19	X	X	X	X	X	
LCSA	Leviathan Creek	LC-18	X	X	X	X	X	
		LC-19	X	X	X	X	X	
DSA	Leviathan Creek Reach #1	LL-1	X	X	X	X	X	
		LL-2	X	X	X	X	X	
		LL-3	X	X	X	X	X	
	Bryant Creek Reach #2	BR-1	X	X	X	X	X	
		BR-2	X	X	X	X	X	
		BR-3	X	X	X	X	X	
	Bryant Creek Reach #3 Upper	BR-4	X	X	X	X	X	
		BR-5	X	X	X	X	X	X
	Bryant Creek Reach #3 Lower	BR-6	X	X	X	X	X	
		BR-7	X	X	X	X	X	
RSA	Upper Mountaineer Creek	BR-8	X	X	X	X	X	
		BR-9	X	X	X	X	X	
		UM-1	X	X	X	X	X	
	Lower Mountaineer Creek	UM-2	X	X	X	X	X	
		UM-3	X	X	X	X	X	
		LM-1	X	X	X	X	X	X
	Cottonwood Creek	LM-2	X	X	X	X	X	
		LM-3	X	X	X	X	X	
		CC-1	X	X	X	X	X	
		CC-2	X	X	X	X	X	
Total Samples ⁷				24				2

- Note(s)
1. Metals: aluminum, antimony, arsenic, barium, beryllium, cadmium, cobalt, copper, chromium, iron, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc.
 2. Arsenic III, arsenic V, and inorganic arsenic
 3. MS/MSD samples will be requested at a rate of 5% for metals analyses. Analyses for lipids and moisture content are not amenable to "spiking" for MS/MSD.
 4. Individual fish will be wrapped in extra heavy duty aluminum foil and placed in an individual zip-top plastic bag. Samples designated for compositing may be further bagged for ease of identifying appropriate composite fish samples.
 5. Fish samples should be stored on ice until ready to ship. When shipping, the fish samples will be shipped with blue ice if the elapsed sample delivery time to the lab will not exceed 24 hours (preferred method) from the time of collection. If the delivery time to the lab will exceed 24 hours, the samples will be shipped with dry ice (maximum shipping time of 48 hours).
 6. Approximate sampling locations shown on Figure 6.
 7. Fillet and offal will be prepared separately for each fish composite resulting in 2 samples per fish composite.

Sample ID(s)

FSAMMDDYYXX Use for all samples collected in the ACSA, consecutively, for a given date.

FSDMMDDYYXX Use for all samples collected in the DSA, consecutively, for a given date.

FSLMMDDYYXX Use for all samples collected in the LCSA, consecutively, for a given date.

FSRMMDDYYXX Use for all samples collected in the RSA, consecutively, for a given date.

Abbreviation(s)

ACSA = Aspen Creek Study Area

ALS = ALS Environmental

DSA = Downstream Study Area

EPA = United States Environmental Protection Agency

g= grams

hr = hours

ID = identification

LCSA = Leviathan Creek Study Area

MS/MSD= matrix spike/matrix spike duplicate

QC = quality control

RI/FS = remedial investigation and feasibility study

RSA = Reference Study Area

SW = SW-846, Test Methods for Evaluating Solid Waste